

9. (Amended) A method of manufacturing a thin film magnetic head according to claim 25, further comprising a step of polishing the surface of the magnetic material layer so as to planarize the surface thereof between the step of forming the magnetic material layer and the step of forming the mask precursor pattern.

10. (Amended) A method of manufacturing a thin film magnetic head according to claim 25, wherein a step of forming the mask precursor pattern includes:

a step of forming a mask precursor layer on the magnetic layer; and

a third etching step of forming the mask precursor pattern by selectively etching the mask precursor layer by reactive ion etching.

17. (Amended) A method of manufacturing a thin film magnetic head according to claim 13, wherein either iron nitride or cobalt iron is used as a material of the metal film pattern.

23. (Amended) A method of manufacturing a thin film magnetic head according to claim 25, wherein a predetermined inorganic material is used as a material of the first mask.

25. (Amended) A method of manufacturing a thin film magnetic head including first and second magnetic layers magnetically coupled to each other and having first and second magnetic poles which face each other, with a gap layer in between, in a recording-medium-facing surface to be faced with a recording medium, a thin film coil provided between the two magnetic layers, and an insulating layer for insulating the thin film coil from the two magnetic layers,

wherein at least one step of forming the first magnetic pole and a step of forming the second magnetic pole includes:

a step of forming a magnetic material layer;

a step of forming a mask precursor pattern on the magnetic material layer;

a first etching step of forming a first mask by narrowing a part of the mask precursor pattern by ion beam etching and, simultaneously, etching the magnetic material layer to a depth in an area other than an area where the first mask is formed; and

a second etching step of forming at least one of the first and second magnetic poles by selectively etching the magnetic material layer by reactive ion etching with the first mask, where the first magnetic pole extends in a direction apart from the recording-medium-facing surface and defines a recording track width of the recording medium, and the first magnetic layer includes a first magnetic layer portion having the first magnetic pole and a second magnetic layer portion which covers an area of the thin film coil and is magnetically coupled to the first magnetic layer portion,

the first mask is formed so that a plane shape thereof includes at least a portion corresponding to the first magnetic pole in the first magnetic layer portion.

26. (Amended) A method of manufacturing a thin film magnetic head according to claim 25, where the first magnetic layer portion further includes an expanded portion which is magnetically coupled to the first magnetic pole on the side far from the recording medium facing surface and is wider than the first magnetic pole, a step in the width direction is formed in a position where the first magnetic pole and the expanded portion are coupled to each other, and a corner is formed at a part where a side face of the first magnetic pole and a step face of the expanded portion in the step cross each other,

the first mask is formed so that the plane shape thereof includes a part corresponding to a plane shape of the expanded portion, and an angle at a part corresponding to the corner of the first magnetic layer portion lies in a range from 90 degrees to 120 degrees.

27. (Amended) A method of manufacturing a thin film magnetic head according to claim 10, wherein in the third etching step, an etching process is performed in a gas

atmosphere containing at least one of chlorine, boron trichloride, hydrogen chloride, carbon tetrafluoride, sulfur hexafluoride, and boron tribromide.

28. (Amended) A method of manufacturing a thin film magnetic head according to claim 10, wherein in the third etching step, an etching process is performed at a temperature in a range from 50 degrees to 300 degrees.

29. (Amended) A method of manufacturing a thin film magnetic head according to claim 25, wherein in the second etching step, at least the first magnetic pole in the first magnetic layer is formed.

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30. (Amended) A method of manufacturing a thin film magnetic head according to claim 25, wherein in the second etching step, at least the second magnetic pole in the second magnetic layer is formed.

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36. (Amended) A method of manufacturing a thin film magnetic head according to claim 34, where the thin film coil has a first thin film coil layer pattern and the insulating layer has a first insulating layer portion which buries at least the first thin film coil layer pattern, the method comprises:

a step of forming the first insulating layer portion so as to cover at least the first magnetic layer portion and the first thin film coil layer pattern; and

a step of forming a first planarized face by polishing a surface of the first insulating layer portion until at least the first magnetic layer portion is exposed.

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38. (Amended) A method of manufacturing a thin film magnetic head according to claim 36, where the first magnetic layer includes a third magnetic layer portion between the first and second magnetic layer portions, the third magnetic portion magnetically coupling the first magnetic layer portion and the second magnetic layer portion

the third magnetic layer portion is patterned on the first planarized face by reactive ion etching.

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40. (Amended) A method of manufacturing a thin film magnetic head according to claim 38, where the thin film coil further has a second thin film coil layer pattern disposed in a layer different from the first thin film coil layer pattern, and the insulating layer further has a second insulating layer portion for burying at least the second thin film coil layer pattern, the method comprises:

a step of forming the second thin film coil layer pattern on the first planarized face and forming a first connection pattern serving as a part of the thin film coil integrally with the second thin film coil layer pattern at an end;

A10 a step of forming the third magnetic layer portion and forming a second connection pattern on the first connection pattern, the second connection pattern serving as a part of the thin film coil;

a step of forming the second insulating layer portion so as to cover at least the third magnetic layer portion, the second thin film coil layer pattern, and the second connection pattern;

a step of forming a second planarized face by polishing a surface of the second insulating layer portion until at least both of the third insulating layer portion and the second connection pattern are exposed; and

a step of forming a conductive layer pattern so as to be electrically connected to an exposed face of the second connection pattern on the second planarized face.

A11 43. (Amended) A method of manufacturing a thin film magnetic head according to claim 25, wherein the magnetic material layer is deposited by sputtering with a predetermined magnetic material.

A12 47. (Amended) A method of manufacturing a thin film magnetic head according to claim 25, wherein in the second etching step, an etching process is performed in a gas atmosphere containing at least one of chlorine, boron trichloride, and hydrogen chloride.

48. (Amended) A method of manufacturing a thin film magnetic head according to claim 25, wherein in the second etching step, an etching process is performed at a temperature in a range from 50 degrees to 300 degrees.

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Please add new claims 49 and 50 as follows:

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--49. A method of manufacturing a thin film magnetic head including first and second magnetic layers magnetically coupled to each other and having first and second magnetic poles which face each other, with a gap layer in between, in a recording-medium-facing surface to be faced with a recording medium, a thin film coil provided between the two magnetic layers, and an insulating layer for insulating the thin film coil from the two magnetic layers,

wherein at least one of a step of forming the first magnetic pole and a step of forming the second magnetic pole includes:

a step of forming a magnetic material layer;

a step of forming a mask precursor pattern on the magnetic material layer;

a first etching step of forming a first mask by narrowing a part of the mask precursor pattern by ion beam etching; and

a second etching step of forming at least one of the first and second magnetic poles by selectively etching the magnetic layer by reactive ion etching with the first mask,

where the first magnetic pole extends in a direction apart from the recording-medium-facing surface and defines a recording track width of the recording medium, and the first magnetic layer includes a first magnetic layer portion having the first magnetic pole and a second magnetic layer portion which covers an area of the thin film coil and is magnetically coupled to the first magnetic layer portion,

the first mask is formed so that a plane shape thereof includes at least a portion corresponding to the first magnetic pole in the first magnetic layer portion.--

--50. A method of manufacturing a thin film magnetic head including first and second magnetic layers magnetically coupled to each other and having first and second magnetic poles which face each other, with a gap layer in between, in a recording-medium-facing surface to be faced with a recording medium, the first and second magnetic poles defining a recording track width of the recording medium, a thin film coil provided between the two magnetic layers, and an insulating layer for insulating the thin film coil from the two magnetic layers,

wherein at least one of a step of forming the first magnetic pole and a step of forming the second magnetic pole includes:

a step of forming a magnetic material layer;

a step of forming a mask precursor pattern on the magnetic material layer;

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a first etching step of etching the magnetic material layer to a depth in an area other than an area where the mask precursor pattern is formed, the first etching step being performed with the mask precursor pattern as a mask by ion beam etching; and a second etching step of forming at least one of the first and second magnetic poles by selectively etching the magnetic material layer by reactive ion etching with the mask precursor pattern as a mask,

where the first magnetic pole extends in a direction apart from the recording-medium-facing surface and defines a recording track width of the recording medium, and the first magnetic layer includes a first magnetic layer portion having the first magnetic pole and a second magnetic layer portion which covers an area of the thin film coil and is magnetically coupled to the first magnetic layer portion,

the first mask is formed so that a plane shape thereof includes at least a portion corresponding to the first magnetic pole in the first magnetic layer portion.--